

Storm Water Guidance



William F. Fifty P.E.

Surface Water and Wastewater Program

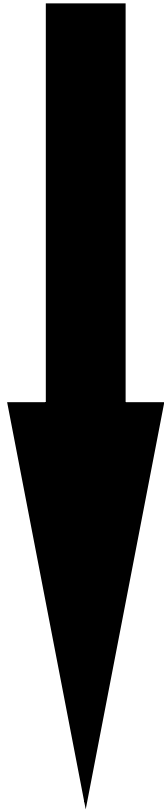
U.S. Army Center for Health Promotion and Preventive
Medicine



What is Storm Water?

- Surface runoff and drainage from natural precipitation, such as rain events and snow melt

Change of Focus



Wastewater Point Sources

Storm Water

Non-point Sources

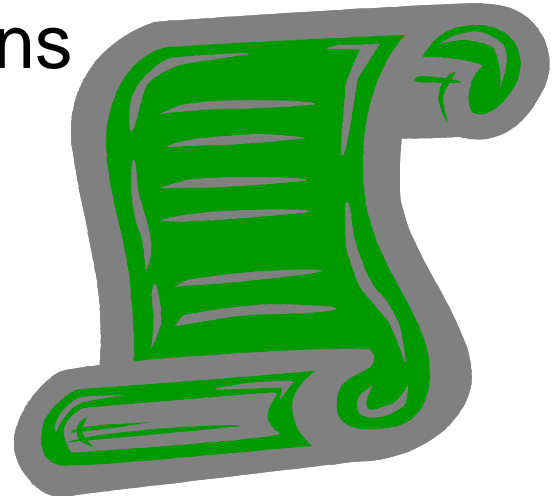


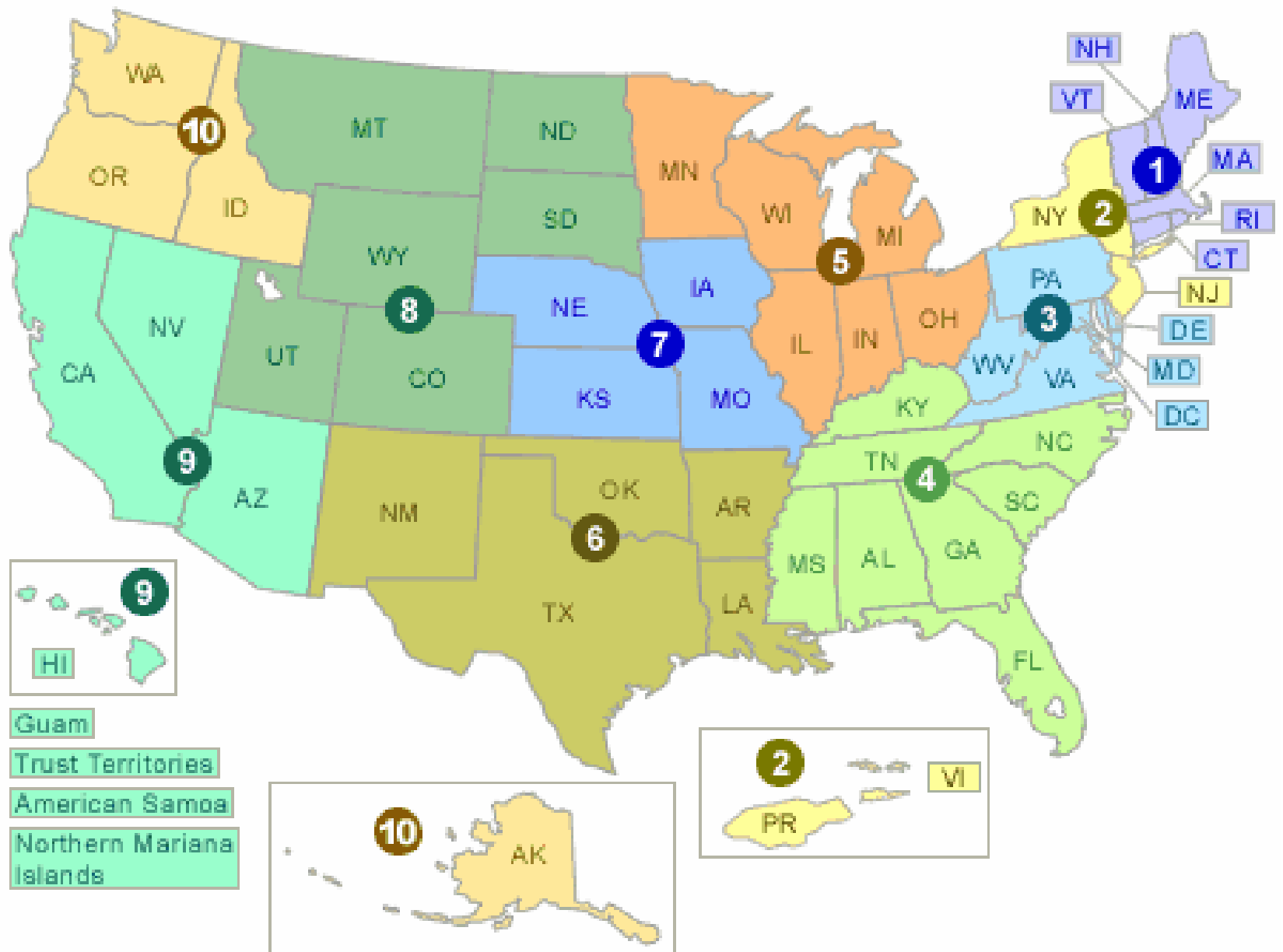
Regulation of Storm Water

- Phase 1
 - Municipal separate storm sewer systems
 - > 100,000 people
 - Most industrial activities
 - Construction activities
 - disturbing > 5 acres
 - Promulgated Nov 16, 1990
- General Storm Water Permits

General Permits

- Authorizes a category of point source discharges within a geographical area
- Advantages:
 - Economical
 - Consistent permit conditions





<http://cfpub1.epa.gov/npdes/stateinfo.cfm>

<http://cfpub2.epa.gov/npdes/statestats.cfm>

State	Approved State NPDES Permit Program	Approved to Regulate Federal Facilities	Approved State Pretreatment Program	Approved General Permits Program	Approved Biosolids (Sludge) Program
Alabama	*	*	*	*	
Alaska					
American Samoa					
Arizona	*	*	*	*	
Arkansas	*	*	*	*	
California	*	*	*	*	

NPDES Permitting Process (individual permits)

File permit application 180 days before expiration or begin discharge



Draft permit issued (includes fact sheet)

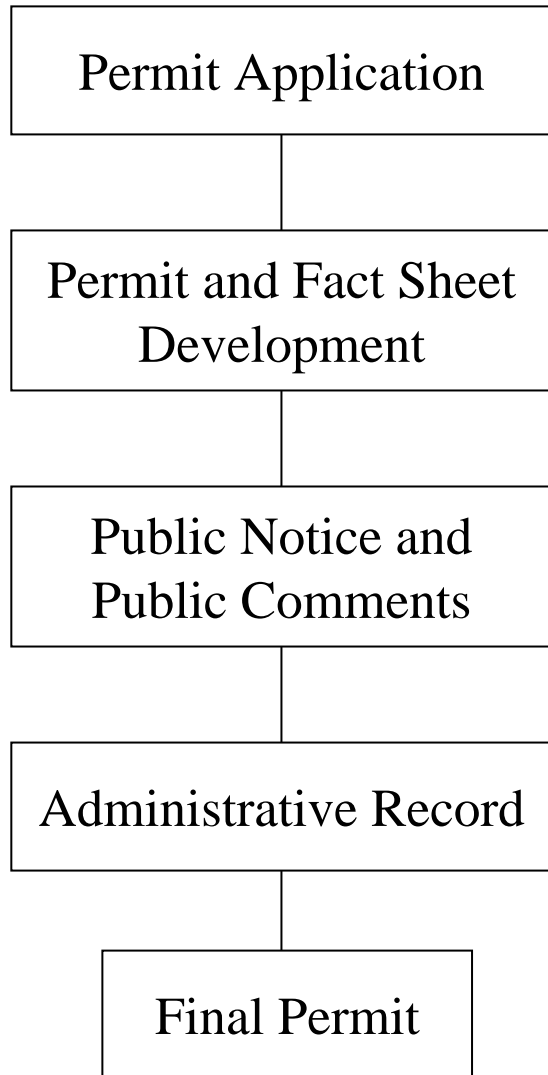


30 day period for public comment

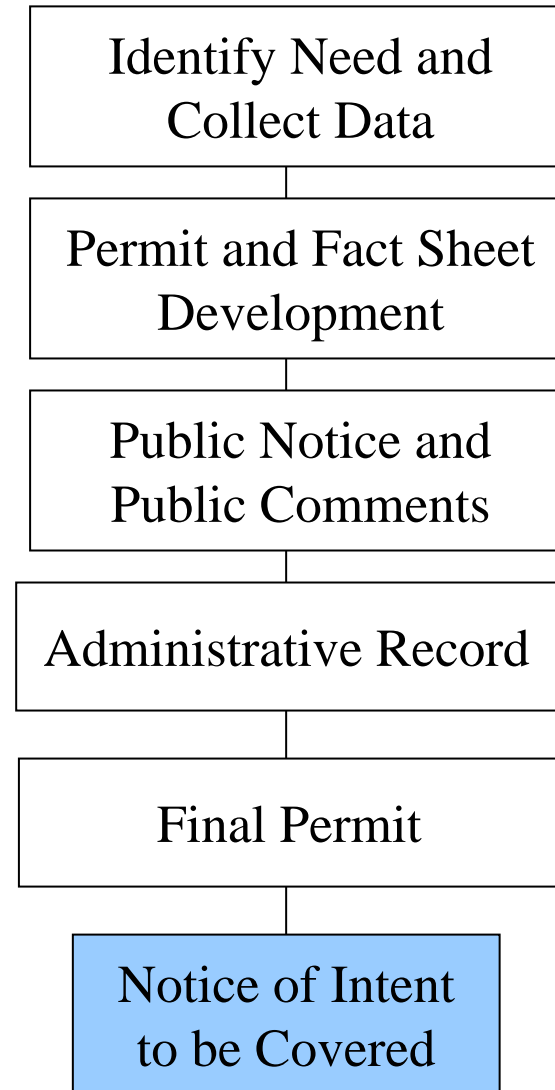


Permit becomes effective 30 days after issuance

Individual Permit

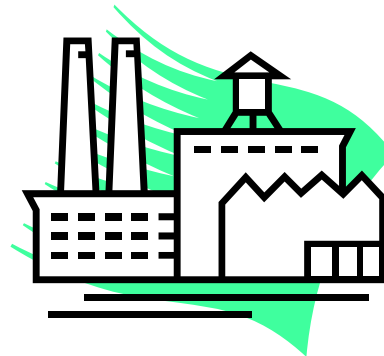


General Permit





Storm Water Phase I Industrial Activities



Industrial Activities

- Facilities with effluent limitations
- Manufacturing
- Mineral, Metal, Oil and Gas
- Hazardous Waste, Treatment, Storage or Disposal Facilities (TSDFs)
- Landfills
- Recycling Facilities
- Steam Electric Plants
- Transportation Facilities
- Treatment Works
- Construction Activity
- Light Industrial Activity

Typical Industrial Activities - 1

(on Army Installations)

- Transportation Facilities
 - Maintenance activities
 - transportation motor pools
 - airports
- Landfills and open dumps
 - Handled industrial waste



Typical Industrial Activities - 2

- Recycle Facilities
 - DRMO yards, scrap yards, battery reclaimers
- HWTSTDF
 - RCRA permitted sites
 - OB/OD areas
- Solid Waste Management Units
 - Those with exposed materials



Typical Industrial Activities - 3

- Sewage Treatment Plant
 - > 1 million gallons/day design capacity
- Bulk Petroleum Areas



Conditional No Exposure Exclusion

- No industrial materials and activities are exposed to rain, snow, snowmelt, and/or storm water runoff
- No storm water permitting required
 - Only available on a facility-wide basis
- Submit a No Exposure Certification
 - Four page questionnaire

Condition of No Exposure



- Storm resistant shelters
- Sealed drums
- ASTs
- Dumpsters w/lids
- Maintained material handling vehicles

EPA's Multi-Sector General Permit

- NOI
 - Certification of no adverse impact on endangered species and in compliance with the National Historic Preservation Act
 - Certification that a Storm Water Pollution Prevention Plan has been prepared.

Storm Water Pollution Prevention Plan

- Major Elements
 - Pollution prevention team designation
 - Evaluation of potential pollutant sources
 - Description of Best Management Practices (BMP)
 - schedule for implementation
 - Documentation of annual site inspections

BMPs -1

- Good housekeeping
- Preventive maintenance of storm water controls
- Spill prevention and response procedures



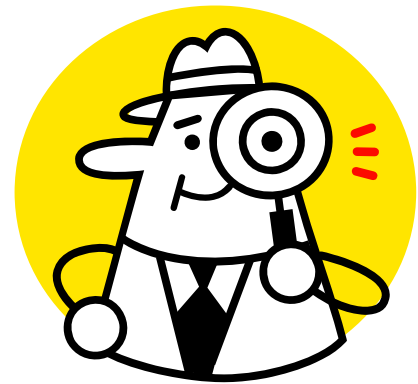
BMPs -2

- Routine inspections
- Employee training
- Erosion and sedimentation evaluation
- Traditional storm water management measures
 - Oil/water separators
 - Detention ponds
 - Vegetative swales



Inspections

- Comprehensive Site Compliance Evaluation
 - Annually
 - Inspect for storm water contamination
 - Evaluate effectiveness of BMP
 - Revise plan
 - Document with report



Monitoring/Reports

- Visual Monitoring
 - Quarterly
 - Indication of storm water pollution
- Benchmark Monitoring
 - Required for certain sectors of industrial activity
 - Quarterly during permit years 2 & 4
 - Compared to benchmark levels
- Annual Compliance Monitoring
 - e.g., coal pile runoff

Permit Termination

- To discontinue permit coverage, submit a Notice of Termination (NOT)

Identified Phase I Problems

- Annual Comprehensive Site Compliance Evaluations are not being performed
 - Paper work not being completed
- Quarterly visual exams are only being conducted sporadically
- Some sites included in SWPPP do not meet the definition of industrial activity

Storm Water Phase II






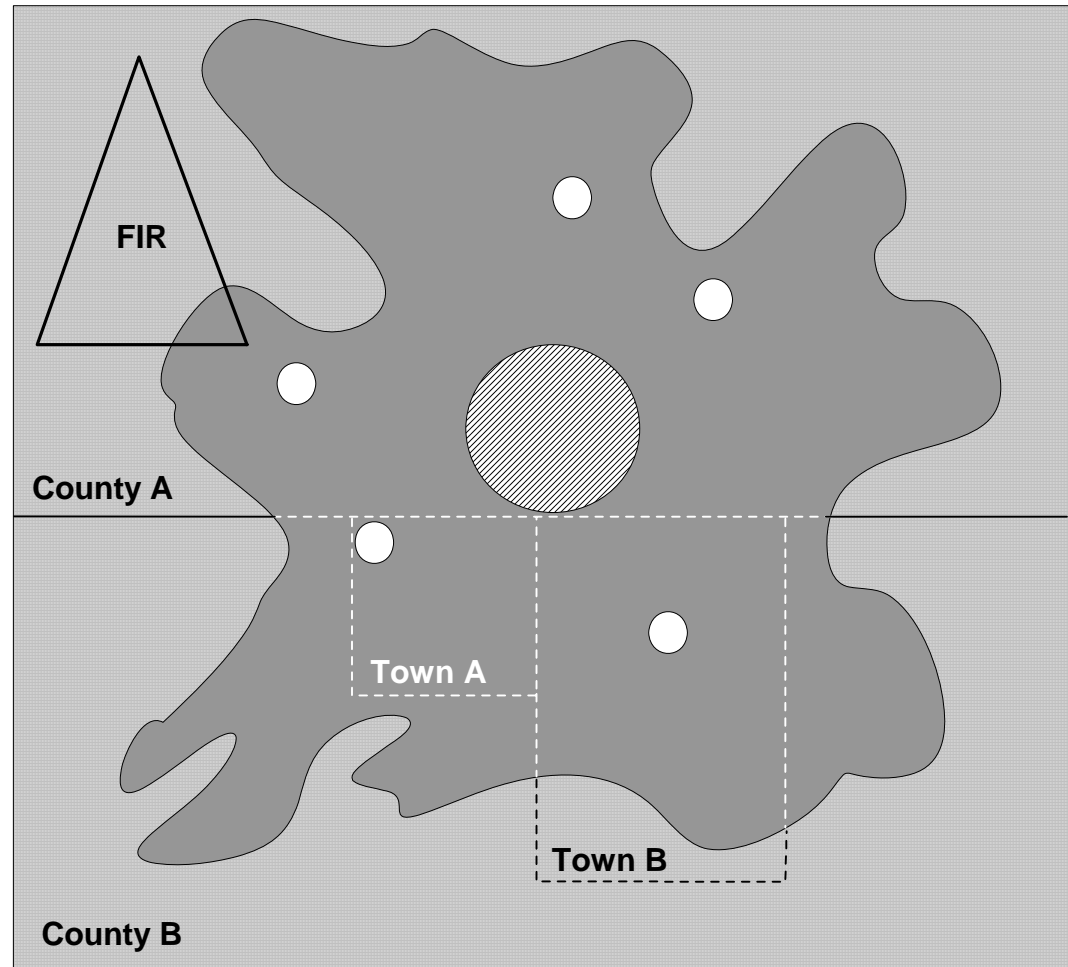
Storm Water Phase II

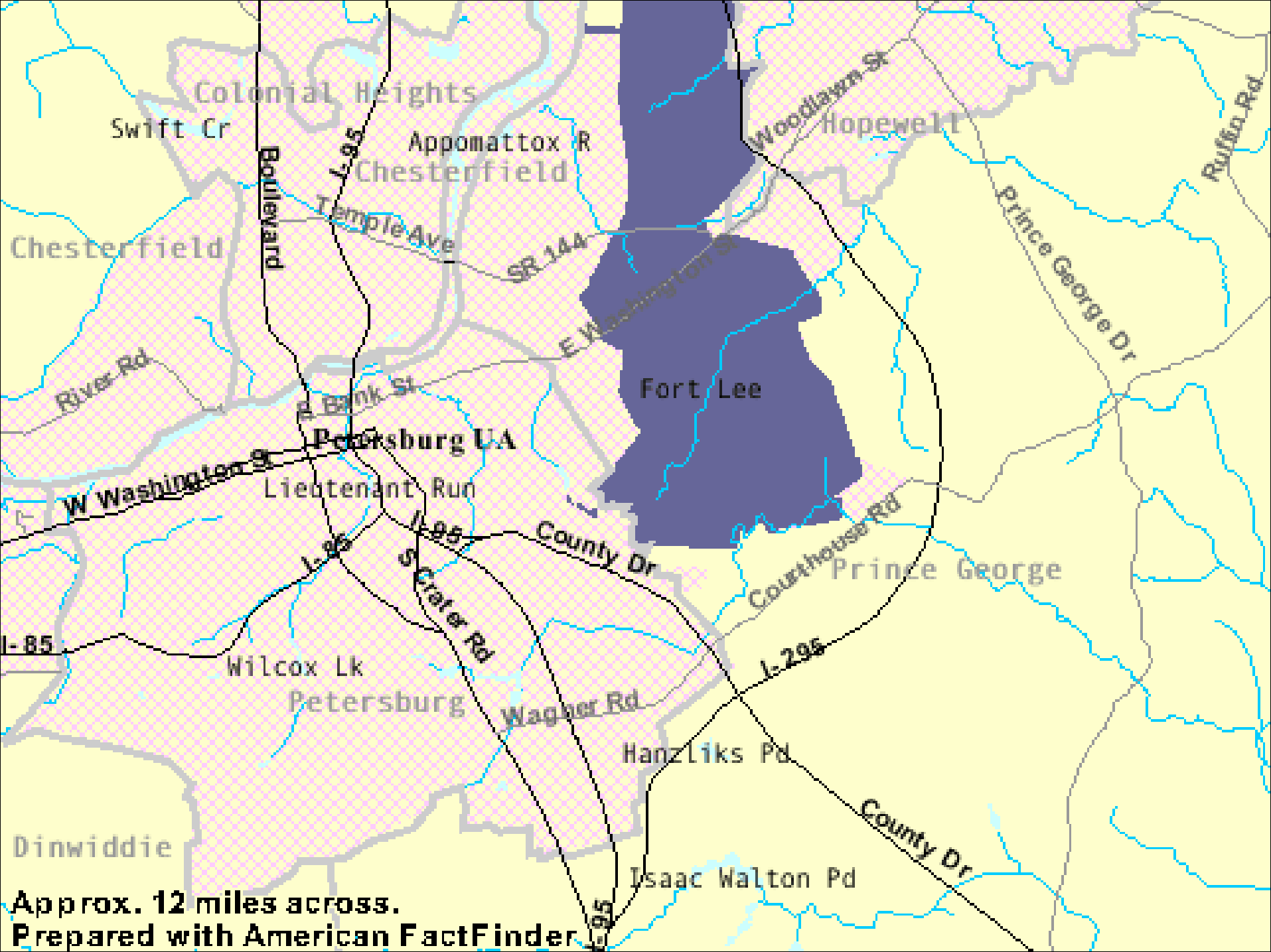
- Promulgated December 8, 1999
- Regulates discharges from
 - Small municipal separate storm sewer systems (MS4) located in urbanized areas
 - includes federally operated small MS4
 - Small construction sites

Urbanized Area Map

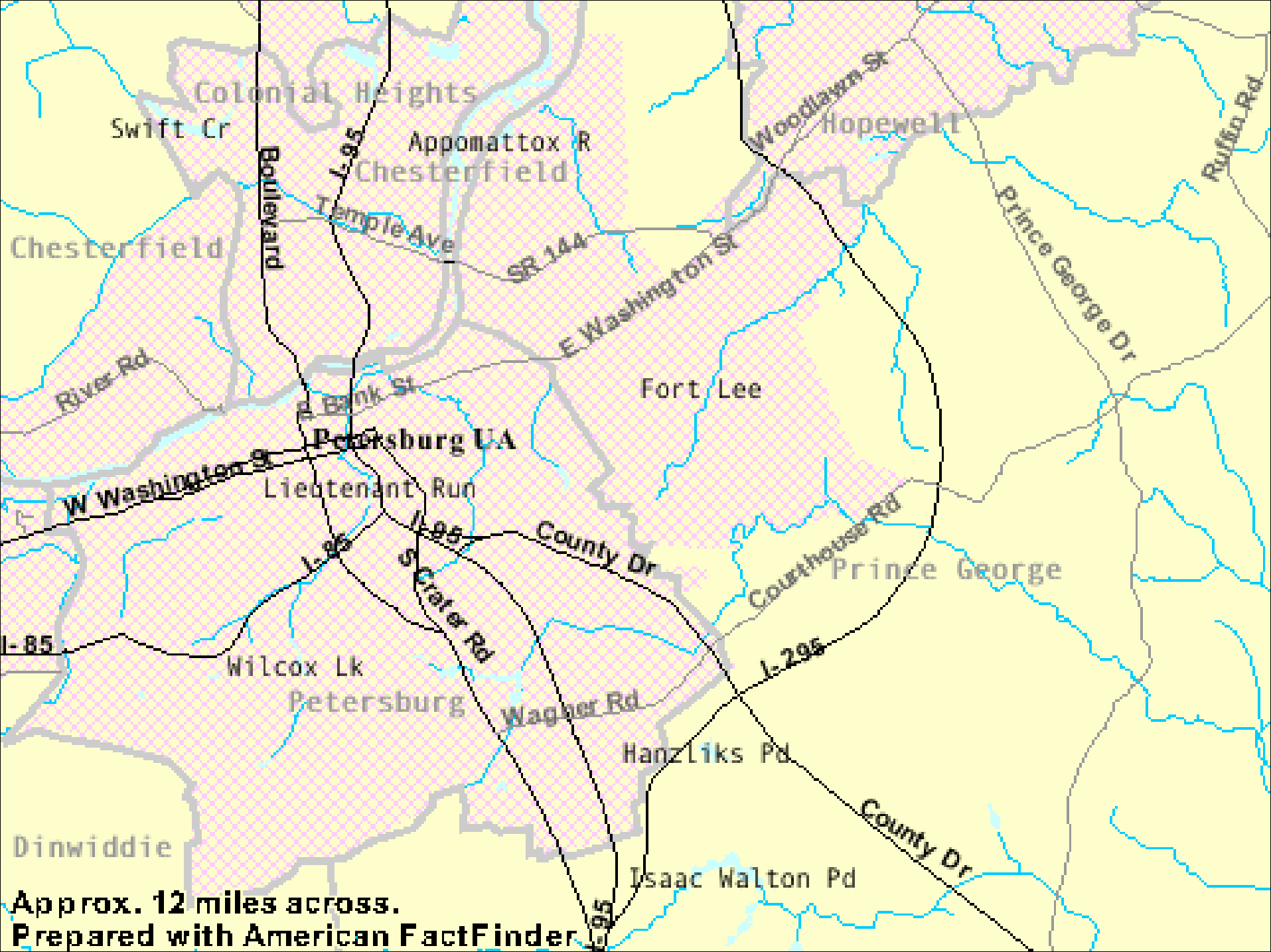
<http://factfinder.census.gov/servlet/BasicFactsServlet>

-  Central Place
-  Incorporated Place
-  Federal Installation





Approx. 12 miles across.
Prepared with American FactFinder.



Approx. 12 miles across.
Prepared with American FactFinder.

Designation/Waivers

- Small MS4 located outside of an urbanized area can be designated for permitting if
 - Population > 10,000 and have the potential to impact surface waters
 - Contributes substantially to an interconnected MS4 that's regulated
- Waivers can be granted for small MS4 located inside urbanized areas
 - Population <1,000 people
 - Not contributing pollutants to interconnected MS4

Storm Water Phase II Rule

- Implements Storm Water Management Program to reduce the discharge of pollutants to the “maximum extent practicable”
- Identifies six minimum control measures
 - Appropriate best management practices (BMP)
 - Measurable goals for each
- Industrial activities are not specifically addressed

Six Minimum Control Measures

1. Public education and outreach
2. Public participation and involvement
3. Illicit discharge detection and elimination
4. Construction site runoff control
5. Post-construction site runoff control
6. Pollution prevention/good housekeeping

Permitting

- Regulated small MS4 must submit an NOI for coverage under Storm Water Phase II General Permit.
- NOI must include:
 - Appropriate BMP and measurable goals for each of the six minimum control measures
 - Timing and frequency of actions
 - Person responsible for completing these actions
- EPA “Storm Water Phase II Compliance Assistance Guide” EPA 833-R-00-002, Mar 00

Monitoring/Reports

- Annual reports
- Address status of compliance
 - Appropriateness of BMP
 - Progress towards measurable goals
 - Results of information collected
 - Activities planned for next reporting cycle
 - Any changes in BMP or measurable goals

1 - Public Education and Outreach

- “Public”
 - Includes residents and employees on post
- Educational program implemented
- Distribute educational materials
 - Brochures
 - Posters
 - Newsletters
 - Promotional giveaways

BMP/Goals for Public Education

DATE	BMP	Measurable Goal
Year 1	Develop and distribute brochures post wide	Brochures sent to tenants and residents
Year 2	Write/publish quarterly newspaper article	Article appears in paper
Year 3	SW awareness posters displayed prominently	Poster in library, post office, credit union

Educational Materials Developed

- Posters
- Brochures
- Stickers
- Magnets
- Coloring Pages
- Fact Sheets
 - Car Care, Household Hazardous Waste, Pet Care, Lawn Care (Fertilizer and Pesticides), Frequently Asked Questions, and Fatty Sewers
- POC – wendy.mervine@us.army.mil

Pet Waste Poster



ARE YOU CLEANING UP AFTER YOUR PET?

Pet Waste and Storm Water Quality

Pet waste can:

- ♦ Enter streams and rivers during storms.
- ♦ Harm fish and degrade water quality.
- ♦ Transmit diseases to children.
- ♦ Make recreational water unsafe.

Tips for proper disposal:

- ♦ Flush it.
- ♦ Bury it.
- ♦ Trash it.

Contact Environmental
at (910) 341-8425.

*Keep your
drain clean
for those
downstream*

Improving Storm Water Quality



Don't Dump Poster

DON'T DUMP HERE...



... IT ENDS UP HERE

*Keep your drain clean
for those downstream*



Improving Storm Water Quality



Contact Environmental
at (910) 341-8425.

Crab Magnets



Stickers

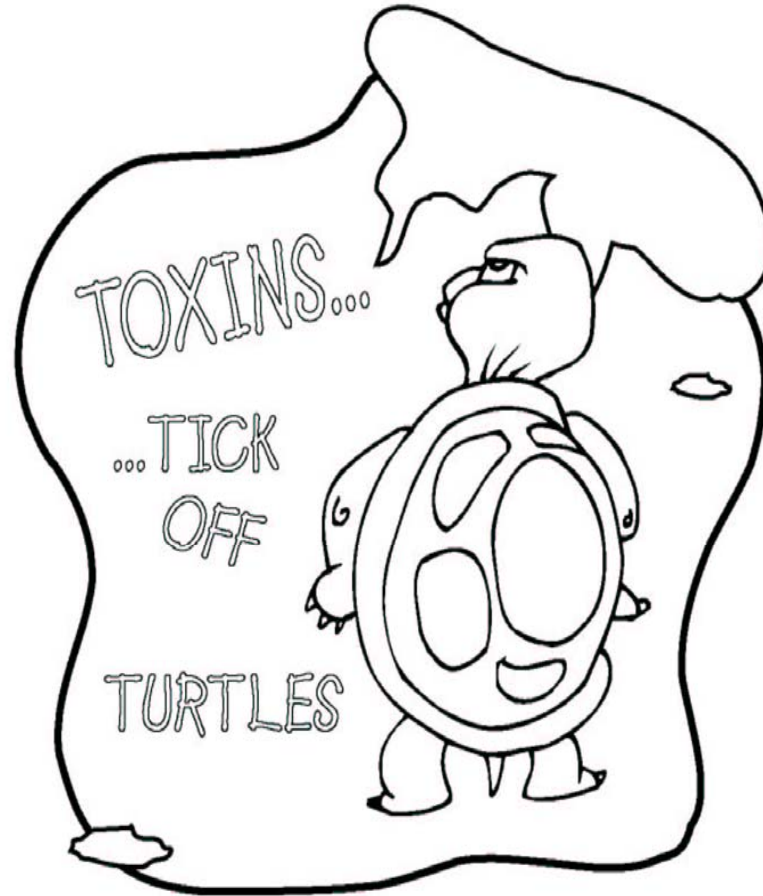
DON'T POLLUTE

Keep storm drains clean
for those downstream!



For further information, contact the installation environmental office at (xxx)xxx-yyyy.

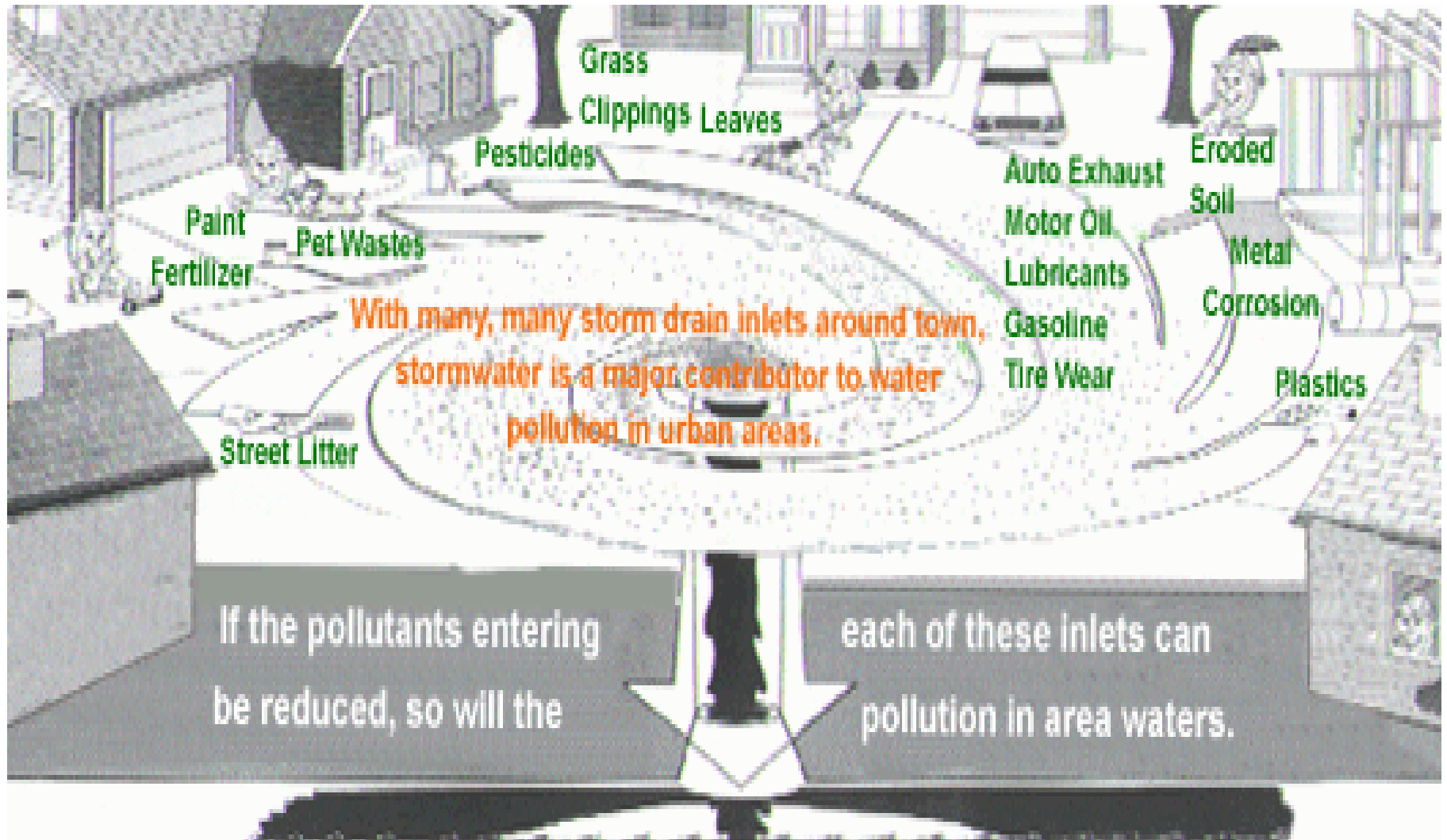
Coloring Pages



You are the solution to storm water pollution... Don't pollute!

Contact Environmental at (910) 341-8425

From EPA Site



2 - Public Participation and Involvement

- Create opportunities for public participation in storm water program
 - Community meetings and organized clean-up efforts
 - Information provided in welcoming packets
 - Involve clubs/groups
 - “adopt a storm drain” program



BMP/Goals for Public Involvement

DATE	BMP	Measurable Goal
Year 1	Prepare Community Outreach Plan with what the public can do and the installation's communication strategy.	Implement Community Outreach Plan
Year 2	Stencil storm drains to identify receiving waters.	Work with interested on-post groups
Year 3	Sponsor a cleanup day of the drainages and storm drains.	Have base personnel and tenant employees participate

3 - Illicit Discharge Detection and Elimination

- “Illicit Discharge”
- Detection and elimination program
 - Storm water map with location of outfalls
 - Regulation prohibiting non storm water discharges
 - Public education effort
 - Plan of action
 - identify likely areas for illicit discharges
 - trace sources
 - remove illicit discharges
 - document actions



BMP/Goals for Illicit Discharge Detection and Elimination

DATE	BMP	Measurable Goal
Year 1	Promote storm drain and illicit connection awareness at public event	Hand out fact sheet at Earth Day event
Year 2	Illicit discharge and cross connection survey	Survey performed and results documented
Year 3	Provide storm drain covers in vulnerable spill areas	Identify storm drains and order covers

Allowable Non-Storm Water Discharges

- Water-line flushing
- Irrigation
- Ground water infiltration
- Potable water sources
- Foundation/footing drains
- Air conditioning condensate
- Lawn watering
- Individual residential car washing
- Street washing



4 - Construction Site Runoff Control

- All construction sites disturbing > 1 acre
- Policy letter/ordinance
 - Erosion control
 - Review of construction plans
 - Site inspections
 - Enforcement
 - BMP and measurable goals



BMP/Goals for Construction Site Runoff Control

DATE	BMP	Measurable Goal
Year 1	Develop guidelines for implementing storm water management policy	Guidelines drafted
Year 2	Develop model storm water management plan for small construction sites	Written plan completed
Year 3	Promote low impact development at all new construction sites.	Develop policy letter for consideration of low impact development

5 Post-Construction Runoff Control

- Develop program to reduce pollutants in site runoff
 - Post-construction BMP
 - Implementing ordinance
 - Long term operation and maintenance (O&M)

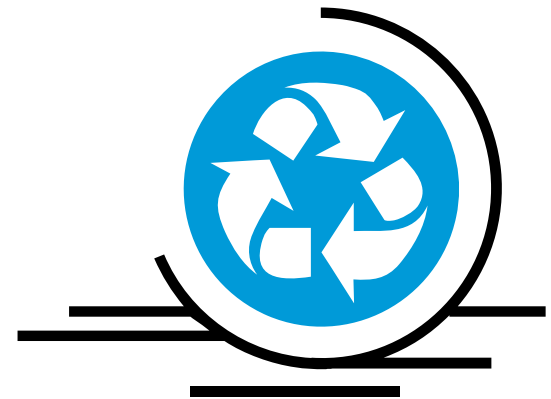


BMP/Goals for Post-Construction Runoff Control

DATE	BMP	Measurable Goal
Year 1	Develop guidelines for implementing post-construction BMP	Guidelines drafted
Year 2	Incorporate post-construction guidelines into model storm water plan	Document revised
Year 3	Establish regular inspection program for small construction sites in post-construction phase	Inspection program established

6 - Pollution Prevention/Good Housekeeping

- Develop O&M program for its storm sewer system
- Train employees
 - Pollution prevention
 - Spill prevention
 - Good housekeeping
- BMP and measurable goals



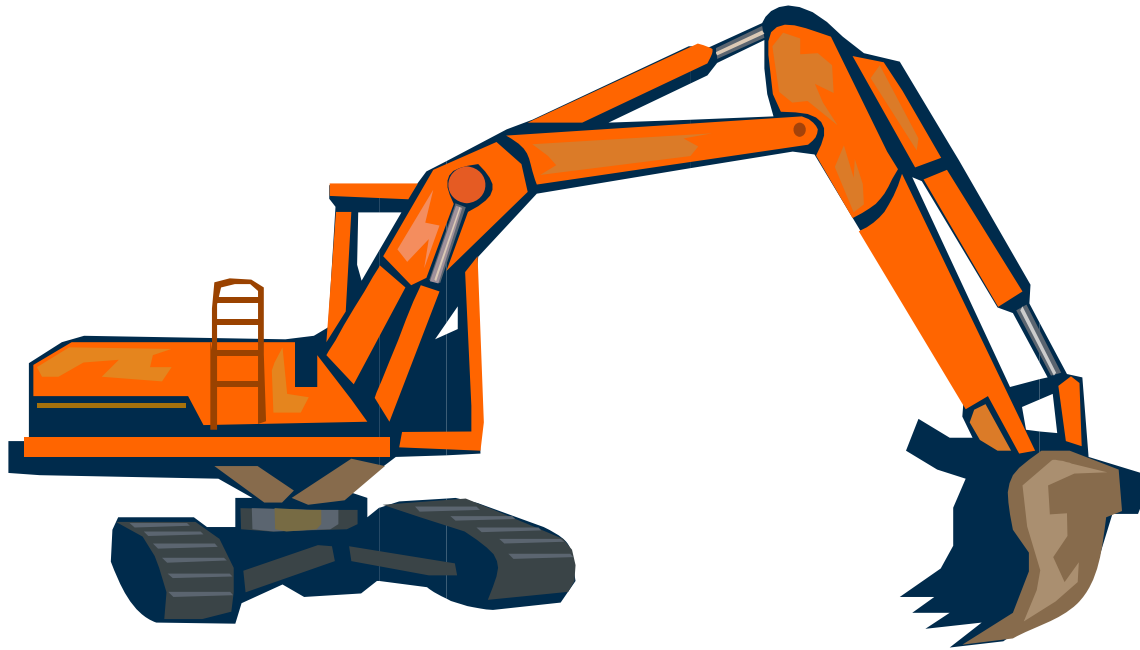
BMP/Goals for Pollution Prevention/Good Housekeeping

DATE	BMP	Measurable Goal
Year 1	Incorporate good housekeeping into existing RCRA inspections	Inspection program developed
Year 2	Develop a FOG Management Plan	Recommendations of FOG Management Plan implemented
Year 3	Develop a Water Resources Management Plan	Plan is drafted

Identified Phase II Problem

- December 8, 2002
 - Deadline for permitting authorities to issue General Permits for small MS4
 - As yet, EPA has not published a Storm Water Phase II permit or associated NOI
- March 10, 2003
 - Deadline for small MS4 to obtain permit coverage
- Recommend
 - Develop Storm Water Management Program
 - Send NOI to EPA regional office

Construction Activities



Construction Storm Water Permitting

- Covers construction activities that disturb 1 acre or more
 - Clearing grading, excavating, stockpiling of fill
- History
 - Storm water phase I regulated >5 acres
 - Storm water phase II regulated 1 - 5 acres
- Construction General Permit
 - Outlines provisions for construction operators

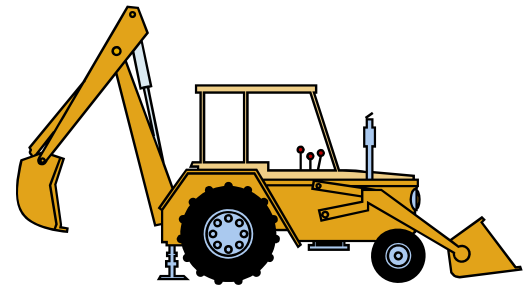


Filing NOI

- The “operator” submits the NOI
 - Possible co-permittee
- Storm Water Pollution Prevention Plan (SWPPP)
 - Responsibility of operator
 - Completed prior to submittal of NOI
 - Updated as work progresses
- Regulatory waivers

Construction SWP3

- Tells how the operator will control storm water runoff
- Basic tenets:
 - Divert SW away from disturbed areas
 - Install BMP to control erosion
 - Inspect regularly and maintain BMP
 - Revise SWPPP as site condition change or BMP found ineffective
 - Minimize bare soil exposure
 - Maintain good housekeeping



Construction BMPs



- Erosion and sediment controls
- Storm water management
- Good housekeeping

Inspections

- BMP inspections
 - Once every 7 days, or
 - Once every 14 days and after every storm event
- Records
 - Maintenance activities
 - SWPPP modifications



Termination of Permit Coverage

- Terminate when project completed and property stabilized
 - 70% of original vegetation has been reestablished
- Submit Notice of Termination (NOT)
- Maintain records for 3 years



Storm Water Construction Activity

- High visibility
 - Potential for NOV
- Major problem
 - Erosion control
 - Final stabilization
- Future direction
 - Low Impact Development



Summary

Storm Water Program Summary

- General Permits – file NOI
- Phase I - industrial activities
 - SWPPP and BMP
 - Visual and analytical monitoring
- Phase II – municipal operations
 - BMP and measurable goals for 6 minimum control measures
- Construction activities (disturbing > 1 acre)
 - SWPPP and BMP for erosion control

Assistance

- USACHPPM, William Fifty
 - William.Fifty@us.army.mil
 - (410) 436-3816



- EPA website for storm water:
http://cfpub.epa.gov/npdes/home.cfm?program_id=6
- USAEC Draft Storm Water Guidance Manual,
December 2004